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BOGSnews

Adding Magnetic Declination to Maps

BY CHRIS CAIRD

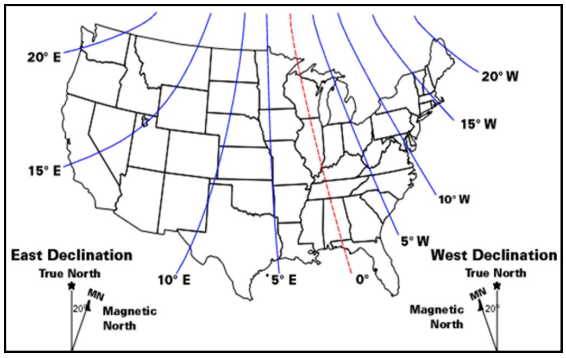


Image: Declination of the continental U.S.
Source: Curtis, R. 1998. The Backpacker's Field Manual.

Magnetic Declination (or declination) is the variation between magnetic north and true north (also called geographic north). The difference is caused by molten magnetic elements in the earth, which are in constant motion. Because of this movement, a compass does not point to true north but rather magnetic north. A map that has a coordinate system and map projection in ArcGIS is always in reference to the geographic North Pole rather than magnetic north, unlike a compass (Bolstad, 2008). Knowing the declination of a particular location at a certain time can be very important when performing precise coordinate geometry work on old deeds that use metes and bounds. Alaska in particular experiences significant annual shifts between the magnetic north and the true north. For those in Alaska delivering cartographic products, it is recommended that a declination be added to every map produced, especially to products that support the description of land or property. For reading suggestions or further discussion on the topic, please contact the Geospatial Support Help Desk at 1-877-293-9494 or email geospatial@bia.gov.

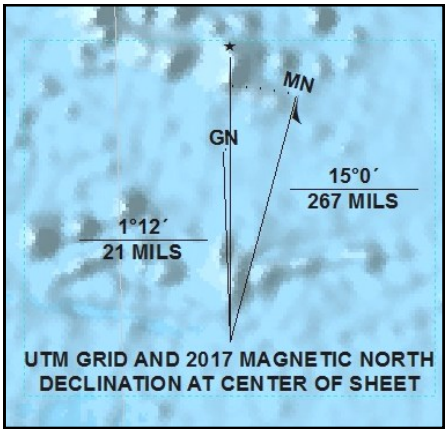


Image: A declination arrow added in ArcGIS.

Steps to adding Declination to an ArcMap layout:

1. Start ArcMap.
2. Load data into the map or open an existing map document.
3. Click the Customize menu, select Extensions, and make sure the Production Mapping extension is enabled (checked).

Note: To see if you are eligible to obtain Production Mapping extension for free, please email the Geospatial Support Help Desk at geospatial@bia.gov or call 1-877-293-9494.

4. Verify that the map is in layout view.
5. On the main menu, click Insert > Topographic > Topo North Arrow.

A default north arrow is added to the layout with the declination value, calculated at the north-south center of the data frame. To calculate the declination at a different location on the map, follow the instructions here: https://blogs.esri.com/esri/arcgis/2010/03/19/adding-a-declination-diagram-in-arcmap/. To calculate a declination at a specific location try using: https://www.ngdc.noaa.gov/geomag-web/.

Bolstad, P. 2008. GIS Fundamentals: A First Text on Geographic Information Systems; 3rd Edition. White Bear Lake, MN: Eider Press.

Find BOGS and the Tribal Resilience Program at the 2017 Esri User Conference!

BY MARGARET HERZOG AND STEVE MESA

At the 2017 ESRI User Conference July 10-14 in San Diego, California, the BIA Tribal Resilience Program (TRP) is partnering with BOGS to provide booth support, region-specific sessions, and promote other Tribal opportunities including a Tribal Resilience poster showcase. Early morning Regional GIS Tribal Resilience sessions will be held daily at 7 a.m. in room SDCC 27A (Monday – Northwest, Tuesday– Eastern & Great Lakes, Wednesday –Southwest, and Thursday– Alaska) to provide data, tools, and methods to address region-specific challenges, including extreme weather and environmental change. On Tuesday at 8:30 a.m., a session on Geospatial Methods for Building Community Resilience will be held in SDCC 28D, where a Tribal luncheon and additional Tribal sessions will be scheduled throughout the day. You may also stop by the BOGS/TRP booth (F2) at the Natural Resources Envisioning Center 1 anytime for training, product upgrades, site licenses, federal-wide resources, and targeted GIS support. Check back before you go for an updated UC17 Tribal Track for download from the BIA TRP homepage (https://bia.gov/WhoWeAre/BIA/climatechange/) which includes a Feedback Form to schedule TRP support in advance. Please contact the Geospatial Support Help Desk with BOGS-related questions or to schedule a meeting at 1-877-293-9494 or by emailing geospatial@bia.gov.

Special Course Offering: *Introduction to Remote Sensing*

By Katie Lewers

The BOGS training program is excited to announce a partnership with NASA to offer two *Introduction to Remote Sensing* course offerings on the current training schedule. Developed and taught by NASA instructors, the three-day technical course will introduce participants to the fundamentals of remote sensing including the basics of land cover mapping and change detection. The course will include hands-on exercises that demonstrate how to search, access, and download satellite data products and imagery, as well as methods to visualize, interpret, and analyze satellite imagery using web tools and ArcGIS software. The course will emphasize and give examples of how remote sensing is used for wildfire management, water quality, forest health, drought, and other natural resource management applications.

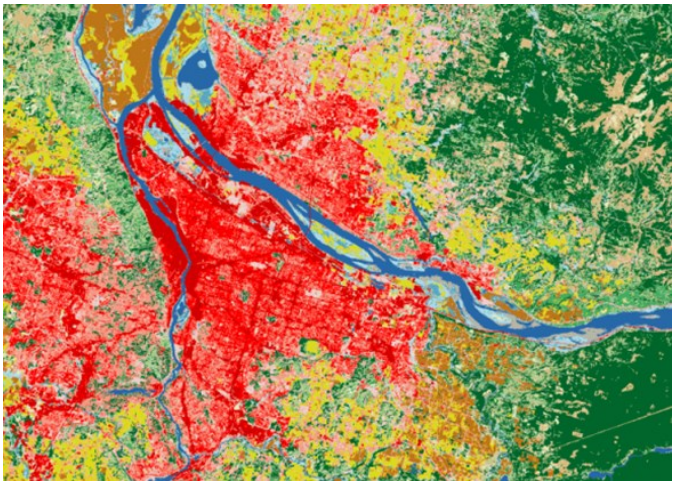
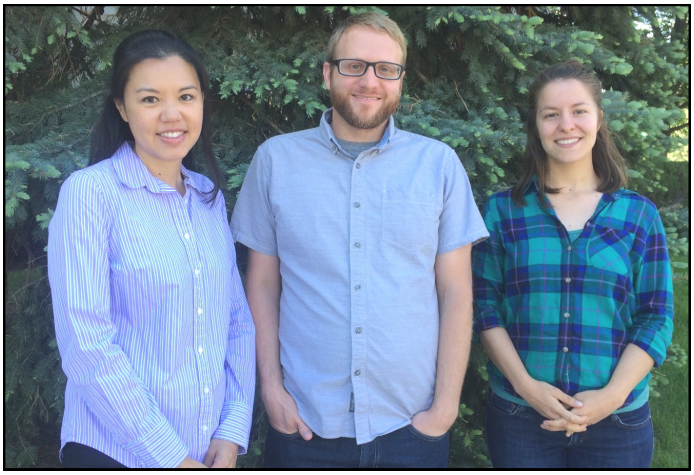


Image: A land cover map example. **Source:** NASA.

No remote sensing or GIS background is required. Contact the Geospatial Support Help Desk at 1-877-293-9494 or geospatial@bia.gov for more information.



From left to right, MaryAnne Tong, James Reed, and Sara Dunlop. Welcome to BOGS!

New Staff Member: MaryAnne

By MaryAnne Tong

MaryAnne Tong joined the BOGS team in April as a GIS Analyst II for the BIA. She graduated from the University of Toronto with honors and received a B.A. in Geography and Environmental Studies. She also earned a postgraduate diploma, Geographic Information Systems – Application Specialist, from Sir Sandford Fleming College. MaryAnne was born and raised in Canada and has been living in the United States since 2001. She has worked in the GIS field for more than 16 years and is a certified GIS Professional. Throughout her career MaryAnne has worked for consultant companies, several local governments and Tribal government. She believes that life is all about balance and keeping your mind and body healthy. In her free time, MaryAnne enjoys exercising, cooking and doing crafts.

New Staff Member: Sara

By Sara Dunlap

Originally a member of the BIA Division of Land Titles and Records, working primarily with the Land Buy-Back Program, Sara Dunlap moved to the BOGS Group in January 2017. A native Texan, Sara worked for a private environment data company after graduating from Texas State University with a B.A. in Anthropology and a minor in Geography before moving to Colorado. She is passionate about GIS and its practical applications. Sara enjoys spending time exploring the outdoors, hiking, and camping with her husband, Alex, and her two dogs.

New Staff Member: James

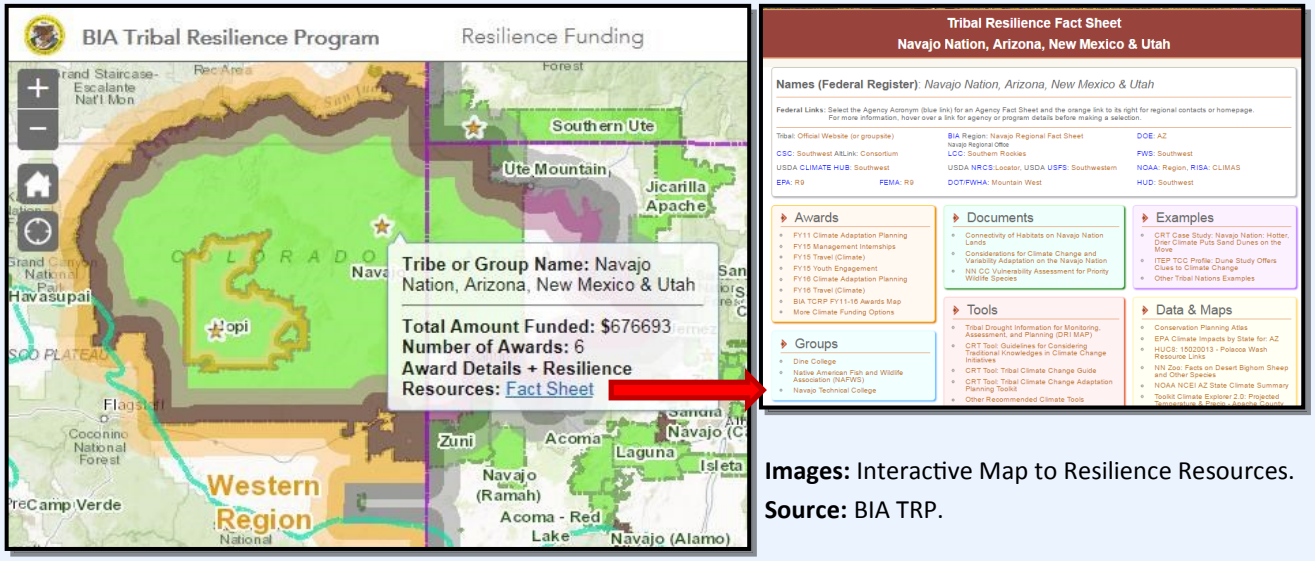
By James Reed

James Reed joined the BOGS team in April 2017 as a GIS Remote Sensing Analyst for the BIA. James received a B.S. in Sociology from the University of Louisville and a M.A. from the University of Denver in GIS. James has previous experience in oil spill and hazard response, environmental mapping, groundwater monitoring, and lots of other interesting niches of GIS and remote sensing. James and his wife moved to Colorado in 2009 to experience something new and have been enjoying the seasonal weather and outdoor activities ever since. He enjoys live and recorded music, playing guitar, rock climbing, and is currently learning the piano along with his daughter at the Children's Music Academy. James is excited to develop new remote sensing projects to serve the tribes and utilize UAV technology for small-scale high-resolution analysis and mapping.

Interactive Map with Resilience Resources

By Margaret Herzog

The BIA Web Portal now includes an interactive Awards Map (https://biamaps.doi.gov/tribalresilience/) for the BIA Tribal Resilience Program (TRP). After accepting the disclaimer, zoom in to select Indian Lands or an award star of interest to access a related *Tribal Resilience Dashboard* that provides federal-wide resources, data and maps, tools, and other support to plan for extreme events and environmental change.



Images: Interactive Map to Resilience Resources.
Source: BIA TRP.

Esri Developer Summit 2017

By Rod Kuhns

This past March several BOGS staff had the opportunity to attend the annual Esri Developer Summit in Palm Springs, California. Over the course of four days, attendees were able to meet the Esri development staff and discuss the latest tools and features in Esri software, including JavaScript API and Python API. BOGS staff learned about the 4.x series of the ArcGIS API for JavaScript, Esri's next-generation API that integrates 2D and 3D into a single API, as well as information on how to build custom widgets to be deployed with Web AppBuilder applications. The Summit also included information on ArcGIS Server 10.5, Portal for ArcGIS 10, Python and Application Testings. On the testing side, there were many new practices and software being developed for automated testing on web applications that can monitor bottlenecks and performance issues to ensure the BIA's web products run smoothly for the end users. The BOGS team are confident these tools will help the BIA's growing efforts to create best practices for managing its Spatial Database Engine and developing web applications for public use.

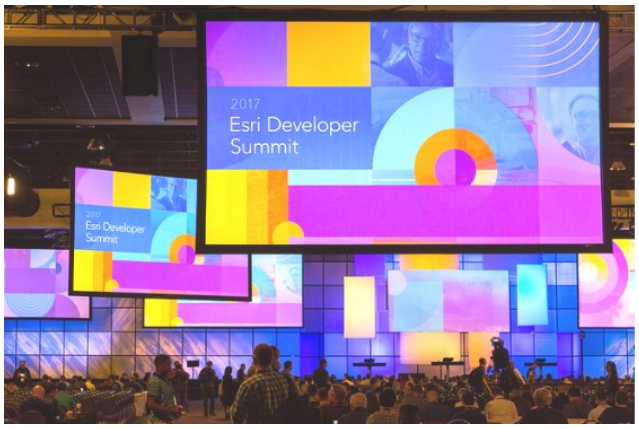


Image: 2017 Esri Developer Summit presentation.
Source: Esri.

Image: An aerial view of a fire perimeter.
Source: NIFC.

Fire Perimeters Online Map

By Bryce Herbert

National Interagency Fire Center (NIFC) and BOGS staff are currently working on creating an online application that will allow final BIA fire perimeters to be digitized within the interface as well as the uploading of existing fire perimeter GIS data. The collection of accurate spatial fire occurrence data is highly important moving forward. In recent years only 8-12% of all BIA fire perimeters have been collected and the goal is to collect all fire perimeters that have burned at least 10 acres. Having such an application and comprehensive data will allow the BIA to better analyze fire fuels treatments and fire history on BIA lands.

JUNE — SEPTEMBER 2017
GEOSPATIAL TRAINING SCHEDULE

BOGS provides geospatial training for employees of federally recognized tribal entities and to Office of Trust Services (OTS) supported functions within the BIA. OTS supported functions includes GIS related activities under the Divisions of Real Estate Services, Land Titles and Records, Probate, Natural Resources, Forestry and Wildland Fire Management, and Water and Power. All slots not filled one month before the beginning of the course will then be open to and filled on a first come, first served basis by employees of federally recognized tribal entities and with employees of the BIA from any office.

There is no tuition cost for this training. Training equipment and training materials are provided by BOGS. Expenses for transportation, hotel accommodations, and meals are the responsibility of the participant's organization. Training courses are available at the BOGS Lakewood Training Facility in Lakewood, Colorado and at various field locations per request and availability.

Principles of GIS (Beginner level)			
Tribe/Office	**Training Location**	**Region**	**Date**
Lakewood Training Facility	Lakewood, CO	-	Jun 26–29
Alaska Regional Office	Anchorage, AK	Alaska	Jul 24–27
Lakewood Training Facility	Lakewood, CO	-	Aug 7–10
Lakewood Training Facility	Lakewood, CO	-	Aug 28–31
Introduction to GPS using ArcPad (Beginner level)			
Tribe/Office	**Training Location**	**Region**	**Date**
Rocky Mountain Regional Office	Billings, MT	Rocky Mountain	Jun 27–28
Pine Ridge Agency	Pine Ridge, SD	Great Plains	Aug 7–8
Yakama Agency	Toppenish, WA	Northwest	Aug 28–29
Cow Creek Band of Umpqua Tribe of Indians	Rosenburg, OR	Northwest	Aug 31–Sep 1
Lakewood Training Facility	Lakewood, CO	-	Sep 12–13
Cheyenne & Arapaho Tribes	Concho, OK	Southern Plains	Sep 21–22
Lakewood Training Facility	Lakewood, CO	-	Sep 27–28
Introduction to Cartography* (Intermediate level)			
Tribe/Office	**Training Location**	**Region**	**Date**
Navajo Nation	Window Rock, AZ	Navajo	Jun 5–8
Pauma Band of Luiseno Mission Indians	Pauma Valley, CA	Pacific	Aug 7–10
Introduction to Remote Sensing (Intermediate level)			
Tribe/Office	**Training Location**	**Region**	**Date**
NASA	Lakewood, CO	-	Jun 12–14
NASA	Albuquerque, NM	Southwest	Aug 21–23

All courses are taught in ArcGIS version 10.4.1 and ArcPad 10.2 unless otherwise indicated.
* Indicates this course has a prerequisite.

Due to the high demand for training, please register early to help ensure placement in the requested course.
To register for a course, email or fax a completed and signed registration form to geospatial@bia.gov**.**
Visit the Geospatial Support website at https://bia.gov and select **Geospatial** from the dropdown, call the Geospatial Support Help Desk at 1-877-293-9494, or email geospatial@bia.gov for a copy of the latest training brochure, which includes a registration form, course descriptions, cancellation and absence policies, priority information, and other training policies.